

Introduction to Computer Science E04 – Lecture 2

Lecture, September 6

We began with an introduction to the course, covering chapter 0 in the textbook, but skipping section 0.2, which is more relevant to your History of Computing course. We also covered section 1.1 of chapter 1.

Lecture, September 13

We will cover the remainder of chapter 1 in the textbook. The textbook's interpretation of the mantissa in floating-point representations is not the same as the IEEE-standard and hence somewhat outdated: The book says that the mantissa 1010 means 0.1010 and that the first bit is always 1 in normalized numbers. IEEE-standard says that 1010 means 1.1010, meaning that the fixed normalization bit is a "hidden bit" or "implicit bit" before the radix point. This way the first bit in the mantissa may be 0. See the notes handed out about the IEEE standard.

Lecture, September 20

We will cover chapter 2 and possibly begin on chapter 3.

Discussion section: week 38

Discuss the following problems from the textbook in groups of three or four:

Page 34: Problem 4.

Page 40: Problems 1, 2, 3c, (see the appendix on page 495).

Page 51: Problems 1c, 2c, 3b, 3d, 4c, 6.

Page 56: Problems 1b, 1c, 1d, 2b, 2c, 2d (for these problems use the floating-point format discussed in class, which is the same as in the textbook except that it uses an implicit bit in the mantissa).

Page 61: Problem 1.

Page 68: Problem 43 (again use the format discussed in class).

Pages 70–71: Problems 1, 5, 7.

Assignment due 8:15, September 21

Late assignments will not be accepted. Working together is not allowed. (You may write this either in English or Danish, but write clearly if you do it by hand.) Show how you get your answers.

1. Convert 10101010 from two's complement to its equivalent base ten form.
2. What is the two's complement representation for the negative of this value (10101010)?
3. Express $-3\frac{3}{8}$ using the floating-point representation discussed in class.
4. Decode 11101011 from the floating-point representation used in class.